

What is claimed is:

1. A sensor including:

(1) a resistive element having a top surface electrode and a bottom surface electrode;

(2) a sensing element for sensing energy from outside and generating an electrical signal;

(3) a field effect transistor element in which a gate electrode is formed on the rear surface of the chip; and

(4) a substrate having a first electrode, a second electrode, and a third electrode on the top surface of said substrate;

wherein

the bottom surface electrode of said resistive element is electrically connected with the first electrode of said substrate;

the gate electrode of said field effect transistor element is electrically connected to a portion of the top surface electrode of said resistive element in such a way that the gate electrode and a portion of the top surface electrode of said resistive element coincides;

one of the electrodes of said sensor element is electrically connected with a portion of the top surface electrode of said resistive element;

a source electrode and a drain electrode of said field effect transistor element are respectively electrically connected with the second electrode and the third electrode on said substrate; and

the other electrode of said sensing element is electrically connected with the first electrode on said substrate.

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1 2. The sensor of claim 1 wherein said resistive element is formed with
2 one of a ceramic material, glass material, and ferrite material.

1 3. The sensor of claim 1 wherein the top surface electrode and the
2 bottom surface electrode of said resistive element contain at lease one of chromium,
3 tin, and indium.

1 4. A method of manufacturing a sensor, said sensor including:
2 (1) a resistive element having a top surface electrode and a bottom
3 surface electrode;
4 (2) a sensing element for sensing energy from outside and generating
5 an electrical signal;
6 (3) a field effect transistor element on which a gate electrode is
7 formed on the rear surface of the chip; and
8 (4) a substrate having a first electrode, a second electrode, and a third
9 electrode on the top surface of said substrate;
10 said method comprising the steps of:
11 electrically connecting the bottom surface electrode of said resistive
12 element with the first electrode of said substrate;
13 electrically connecting the gate electrode of said field effect transistor
14 element to a portion of the top surface electrode of said resistive element in such a
15 way that the gate electrode and a portion of the top surface electrode of said
16 resistive element coincides;

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22 electrically connecting the other electrode of said sensing element
23 with the first electrode on said substrate.

3 forming an electrode over the entire top and bottom surfaces of a
4 large-area flat resistor body in advance;

measuring its resistance value; and
cutting to predetermined dimensions based on the measured
resistance value to obtain a predetermined resistance value.

1 6. The method of manufacturing a resistive element of claim 5
2 wherein said resistor body is formed by sintering at a temperature at which the
3 water absorption rate becomes 1% or below.

1 7. The method of manufacturing a sensor of claim 4 wherein the step
2 of electrically connecting the bottom surface electrode of said resistive element
3 with the first electrode of said substrate further comprising:
4 obtaining a predetermined resistance value by electrically connecting
5 the bottom surface electrode of said resistive element with the first electrode of said

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